A naturally human evolution of the interface.
Instinct™ technology. Intuitively functional.

Grayhill Instinct is a set of multi-touch gesture recognition software tools that, when integrated with Grayhill physical components, creates more intuitive human interface solutions.

The Multi-Touch Ring Encoder combines a touchpad with multi-touch tracking, an optical encoder and pushbutton into one easy-to-use device. By combining gesture recognition technology with a ring encoder, we provide the ultimate in input flexibility. Menu search, selection, navigation and much more are all in one user interface that can be easily integrated into future devices.

A shorter distance from mind to machine.

An intuitive, easy to use interface improves operator productivity. Our Instinct technology enables an operator’s thoughts to be seamlessly communicated to the device. This allows faster interaction without needing to take eyes off of the screen. For the operator it makes controlling a machine easier to manage. And unlike touch screens, the display is left clean and unblocked. Plus, ergonomics are improved by consolidating all controls within easy reach.
Let your fingers do the directing.

Finger gestures are a popular means of controlling contemporary electronic devices. Instinctive, memorable movements provide a variety of commands...all without the fingers leaving the touchpad. Grayhill’s Instinct technology tracks up to five finger touches at a time. The Multi-Touch Ring Encoder combines the multi-touch touchpad with an optical encoder and a push button to offer even more functionality. Several gestures are shown below.

<table>
<thead>
<tr>
<th>Move Cursor</th>
<th>Zoom</th>
<th>Rotate</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Move Cursor" /></td>
<td><img src="image2" alt="Zoom" /></td>
<td><img src="image3" alt="Rotate" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Momentum Scroll</th>
<th>Flick</th>
<th>3d Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="Momentum Scroll" /></td>
<td><img src="image5" alt="Flick" /></td>
<td><img src="image6" alt="3d Gesture" /></td>
</tr>
</tbody>
</table>

An elegant engineering solution for controlling electronic equipment.

Simplicity in use and device design. The Multi-Touch Encoder can replace keypads, knobs, trackballs and switches. This makes for clean design and cuts costs of manufacturing. Combined with the Instinct gesture recognition library, the multi-touch encoder increases the engineer’s flexibility in building functionality into any product.

Possible applications include:
- Medical devices
- Off-highway vehicles
- Commercial aviation
- Gaming
FEATURES

• Grayhill Instinct™ Gesture Recognition Technology
• Three devices in one:
  + Multi-Touch Touchpad
  + Optical Encoder
  + Pushbutton
• Impervious to cleaning solutions and disinfectants
• Easy to integrate into any device
• Rugged, scratch-resistant surfaces
• Backlit illumination and colored highlight ring
• Redundant quadrature and push button output
• Patent pending

SOFTWARE DEVELOPMENT KIT

Grayhill offers an Instinct Software Development Kit that provides the user with a common development platform for prototyping and evaluating different solutions. The Software Development Kit is comprised of a mounted Multi-Touch Ring Encoder, a standard USB cable and demo software.

ENVIRONMENTAL SPECIFICATIONS

Operating temperature: -10°C to +60°C
Seal: IP65 knob with labyrinth seal through panel
Humidity: 95% Humidity at 60°C for 240 hours
Chemical resistance: 24 Hr exposure to betadine, Coffee, Water, Cola, NACL, Isopropyl Alcohol, Betadine, Hydrogen Peroxide, “Quats,” and Cidex

ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS

Designed and tested for use in systems requiring IEC 60601-1
RF Emissions: CISPR 11 Group 1 Class B
Electrostatic Discharge: IEC 61000-4-2 ±6kV Contact ±8kV Air
Electrical Fast Transient/Burst: IEC 61000-4-4 ±1kV Coupling Clamp
Power Frequency (50/60 Hz) Magnetic Field: IEC 61000-4-8 3 A/m
Conducted RF: IEC 61000-4-6 Level 1 - 120dBuV, 150 kHz to 80 MHz
Radiated RF: IEC 61000-4-3 3 V/M 80 MHz to 2.5 GHz

ELECTRICAL PERFORMANCE SPECIFICATIONS

USB: 2.0, 3.0 Compatible, Full speed
HID Compliant
Operating Voltage: 2.5 to 5.5 Vdc
Input Current: 250mA max (at full backlight) @5V
Rotational Life: 500,000 cycles minimum
Pushbutton Life: 3,000,000 actuations minimum
Encoder Output: 2-Bit Quadrature, Channel A leads Channel B by 90° electrically during CW rotation

ORDERING INFORMATION

Grayhill Instinct™ Multi-Touch Ring Encoder Device
Size: 50mm x 70mm
Type: Capacitive
Knob Style: T101-XXX-XXX-XX
Torque: G = Torque, L = Low Torque, M = Medium Torque, H = High Torque
Pushbutton Option: 0 = No pushbutton, 1 = Pushbutton
Angle of Throw: 11 = 11.3° for Code Change and 32 detent position
Highlight Ring Color: 0 = None, 1 = White, 2 = Blue, 3 = Red, 4 = Green

PIN OUT ENCODER
1 Output A
2 Output B
3 Pushbutton

PIN OUT USB
1 +Vcc
2 USB Negative (D-)
3 USB Positive (D+)
4 Gnd

MATING CONNECTOR
Molex 501939-0400 and 501939-0300